

REMARKS

Claims 1-20 are pending in the present application. With entry of this Amendment, Applicants amend claims 10, 14, 16 and 20, cancel claim 12 and add new claims 21-24. Reexamination and reconsideration of the claim are respectfully requested.

Applicants have amended the specification to correct a spelling error. No new matter has been added.

The Examiner notes that the changes made to 35 U.S.C. § 102(e) by AIPA do not apply to this application. Applicants respectfully note that the present application was filed on March 5, 2002. Accordingly, the changes made § 102(e) by AIPA do apply.

Rejections Under 35 U.S.C. § 102(b) and § 102(e)

The Examiner rejected claims 1-20 under § 102(b) as being anticipated by Suzuki et al. (US 5,027,688), Suzuki et al. (US Re. 34,700), Suzuki et al. (US 4,905,560), Suzuki et al. (US 5,170,002), Hiyoshi et al. (US 5,125,313), Hiyoshi et al. (US 5,147,969), Hiyoshi et al. (US 5,290,964), Suzuki et al. (US 5,177, 311) and Suzuki et al. (US 5,058,480). Claims 1-20 were rejected under § 102(e) as being anticipated by Por Paul (US 6,297,438).

The present invention is directed to generating tones that reflect a user's motions. Fig. 1 illustrates one embodiment. A tone signal generation system 100 comprises a personal computer 10 and an operation terminal 11 grasped by a user. The system is arranged to generate tone signals corresponding to a movement trajectory of the operation terminal. The movement trajectory is drawn by a succession of movements of the operation terminal. Based on signals received from sensors during the succession of movements, the system detects a trajectory, i.e., path, and generates a tone signal based on the detected path or movement trajectory.

In contrast, all of the cited references merely disclose detecting a signal from a single parameter (e.g., acceleration) and generating a tone signal based on the detected parameter. None of the references discloses obtaining signals for a succession of movements and then detecting a movement trajectory drawn by the succession of movements.

Specifically, Suzuki '688, Suzuki '700 and Suzuki '560 are all directed to detecting a bending angle of a player's elbow or wrist and producing a musical tone signal in response to the detected angle. These references do not disclose detecting the path of movement (e.g., circular, rectangular, etc.) but rather the change in distance.

Suzuki '002, Suzuki '480 and Suzuki '311 disclose placing an acceleration sensor in a hand-held element and producing a tone signal based on the detected acceleration. Hiyoshi '964 also discloses using an acceleration sensor and controlling tone based on the detected results. These references are thus directed to detecting acceleration – not detecting the movement trajectory.

Similarly, Hiyoshi '313 and its divisional Hiyoshi '969 do not disclose detecting a movement trajectory, but rather generating a tone signal based on the position of a finger tip.

Por Paul discloses a toy baton with a pendulum in its interior. The pendulum is responsive to the motion of the baton and, based on the direction of motion, engages a particular contact to close a circuit. Pivoting the baton in different directions (e.g., forward, sideways) produces different sounds. Por Paul thus merely discloses generating a tone based on the direction of the baton and does not disclose detecting a path of movement to generate a tone signal.

Therefore, none of the references discloses detecting a movement trajectory. Because independent claims 1, 9, 13, 15, and 19 all recite detecting a movement trajectory, these claims are not anticipated by or obvious in view of any of the cited references, alone or in combination. Applicants respectfully request that the rejection of these claims be withdrawn.

For the reasons discussed above, claims 2-8 and 17 which depend from either claim 1 or claim 15 are not anticipated by or obvious in view of the cited references. Furthermore, claims 4-8 which depend from claim 1 all recite detecting a shape of a movement trajectory, e.g., a circle, a triangle or a rectangle. None of the prior art references discloses or even suggests detecting the shape of a movement trajectory.

Applicants have added new claim 21 which depends from claim 1 and recites detecting a shape of a movement trajectory. Accordingly, claim 21 is in condition for allowance for the reasons discussed above.

Independent claims 10, 14, 16 and 20 and their respective dependent claims are not anticipated by or obvious in view of the cited references. These independent claims, as amended, recite a predetermined portion of an operation terminal or a tone signal generation apparatus that is made of an elastically-deformable material. A tone signal is based on a detected amount of displacement, caused by deformation, of the predetermined portion. Because the cited references do not disclose this feature, Applicants respectfully request that the rejection of these claims be withdrawn.

Applicants have added three other new claims. Claims 22 and 23 depend from claim 10 and are in condition for allowance for the reasons discussed above. Claim 24 is an independent claim and recites generating a tone signal based on a detected amount of displacement, caused by hitting, of a predetermined portion of an operation terminal. Accordingly, claim 24 is also in condition for allowance.

Provisional Double Patenting Rejection Under 35 U.S.C. § 101

The Examiner provisionally rejected claims 1-20 under § 101 as claiming the same invention as that of claims 1-20 of copending application with U.S. Serial No. 09/948,065 (hereinafter "the '065 Application"). The '065 Application has been abandoned. Accordingly, Applicants respectfully request that the provisional rejection be withdrawn.

Statement Regarding Foreign Priority Claim

Applicants note that the present application is a continuation-in-part of the parent application -- the '065 Application filed on September 5, 2001. The present application claims priority from Japanese patent application no. 2000-269160 filed on September 5, 2000. All papers and documents required to make the claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f) were filed in the parent application on September 5, 2001. Applicants respectfully

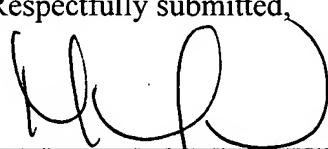
request acknowledgment of the priority documents to ensure that the priority information appears on the printed patent for this application.

In view of the foregoing, Applicants respectfully submit that claims 1-11 and 13-24 are in condition for allowance. If the Examiner feels that it would advance the prosecution of the application, it is respectfully requested that the Examiner telephone the undersigned attorney.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version with markings to show changes made**".

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, Applicants petition for any required relief including extensions of time and authorize the Assistant Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 393032027920.

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Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

Paragraph beginning at page 44, line 8, and continuing to page 45, line 24 has been **amended** as follows:

Further, when a desired music piece or the like is to be performed by the tone generation scheme using the above-described tone signal generation system 100, the human operator can perform the music piece by referring to a novel form of musical score (hereinafter “movement-trajectory-descriptive” musical score) where shapes, sizes, speeds, etc. of movement trajectories of the operation terminal are described in a time series, in place of the musical score, such as the staff notation, commonly used in conventional musical instrument performances; the movement-trajectory-descriptive musical score used in the present invention may describe individual motions, constituting the movement trajectory, in graphics representative, for example, of dancing motions. The movement-trajectory-descriptive musical score corresponds in contents to settings registered in the above-described tone signal table 47, and thus as the registered contents of the tone signal table 47 are varied, the motions of the human operator moving the operation terminal 11 are varied in conformity with the varied tone signal 47 even when the same music piece is to be performed. That is, if the registered settings in the tone signal table 47 are varied, the music piece performance using the tone signal generation system 100 requires the human operator to make different motions even for the same music piece. Therefore, by varying the settings of the tone signal table 47 as appropriate, the user of the personal computer system 10 can independently create original movement trajectories to be drawn or followed by the operation terminal 11 for performing a given music piece, i.e. original motions of the human operator carrying the operation terminal 11. If the original motions of the human operator are created like this, stored contents or settings of the tone signal table 47 for executing the original motions, movement-trajectory-descriptive musical score corresponding to the settings, etc. can be supplied to some other person such as a friend [fiend]. If the settings of the tone signal table

47, movement-trajectory-descriptive musical score corresponding to the settings and the like are supplied to some other person as above and if the supplied settings are registered into the tone signal table 47 and motions are made exactly to the movement-trajectory-descriptive musical score, the other person too can perform the music piece in just a similar manner to the user who created the movement trajectories or original motions.

In the Claims:

Claim 12 has been **canceled**.

Claims 10, 14, 16 and 20 have been **amended** as follows:

10. (Amended) A tone signal generation system comprising:

an operation terminal that is capable of being carried by a human operator and has a predetermined portion made of an elastically-deformable material, said operation terminal including a sensor positioned within the predetermined portion for detecting an amount of displacement, caused by deformation, of the predetermined portion, said operation terminal transmitting displacement amount information indicative of the amount of displacement detected via the sensor [that detects a mechanical amount of said operation terminal corresponding to a motion of the human operator carrying said operation terminal, such as an amount of displacement of a predetermined portion of said operation terminal or pressure applied to the predetermined portion, and transmits information indicative of the detected mechanical amount];
and

a tone signal generation apparatus that receives the displacement amount information [indicative of the detected mechanical amount] transmitted from said operation terminal and generates a tone signal on the basis of the received displacement amount information [indicative of the detected mechanical amount].

14. (Amended) A tone signal generation apparatus capable of being carried by a human operator, said tone signal generation apparatus comprising:

a detection section that has a predetermined portion made of an elastically-deformable material and a sensor positioned within the predetermined portion for detecting an amount of displacement, caused by deformation, of the predetermined portion [detects a mechanical amount of said tone signal generation apparatus corresponding to a motion of the human operator carrying said tone signal generation apparatus, such as an amount of displacement of a predetermined portion of said tone signal generation apparatus or pressure applied to the predetermined portion]; and

a tone signal generation section that generates a tone signal on the basis of displacement amount information indicative of the [mechanical] amount of displacement detected by said detection section.

16. (Amended) A method of generating a tone signal corresponding to a motion of a human operator carrying an operation terminal, said method comprising:

a detection step of detecting [a mechanical] an amount of displacement, caused by deformation, of a predetermined portion, made of an elastically-deformable material, of said operation terminal [corresponding to the motion of the human operator carrying said operation terminal, such as an amount of displacement of a predetermined portion of said operation terminal or pressure applied to the predetermined portion]; and

a tone signal generation step of generating a tone signal on the basis of the received information indicative of the [mechanical] amount of displacement detected by said detection step.

20. (Amended) A machine-readable storage medium containing a group of instructions to cause said machine to perform a method of generating a tone signal corresponding to a motion of a human operator carrying an operation terminal, said method comprising:

a detection step of detecting [a mechanical] an amount of displacement, caused by deformation, of a predetermined portion, made of an elastically-deformable material, of said operation terminal [corresponding to the motion of the human operator carrying said operation terminal, such as an amount of displacement of a predetermined portion of said operation terminal or pressure applied to the predetermined portion]; and

a tone signal generation step of generating a tone signal on the basis of the received information indicative of the [mechanical] amount of displacement detected by said detection step.